

Chenical Waste Management, Inc.

TWI ROTH ROTHIT FILE

Midwest Region 2000 South Batavia Avenue Geneva, Illinois 60134 708/513-4500

November 9, 1990

Mr. Bharat Mathur
Permit Manager
Division of Air Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

Mr. Lawrence Eastep
Permit Manager
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

RE: Trade Waste Incineration Sauget, IL

IEPA DAPC 163121AAP
IEPA DLPC 1631210009
Unit #4 Post Trial Burn Conditions
Response to October 19, 1990 Letter

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IEPA-DLPC

Dear Sirs:

This letter is in response to your letter of 10/19/90 and our 11/7/90 meeting and discussion with your representative staff members. Based on our understanding of that meeting, it was agreed that the 10/19/90 letter was not a permit modification to TWI's RCRA, Part B Permit, and that TWI should respond to the letter. Accordingly we are revising various conditions discussed in Items 3 and 4 of your 10/19/90 letter. Also included is a discussion of the proposed modifications based on the successful Trial Burn Test Run Numbers 6 through 8.

Based on previous discussions with IEPA, TWI conducted the initial trial burn test with the objective of maximizing total Btu's, total Cl, and total feeds through the unit. This approach was consistent with TWI's past experience with the trial burn process, as well as IEPA's previous permitting approach. TWI will plan and implement the next trial burn in such a manner to develop representative operating ranges for the parameters set forth in the October 19, 1990 letter, so that realistic operating conditions can be developed for inclusion in a permit modification.

Table No. 1 (attached) indicates the conditions outlined in Items No. 3 and 4 in your 10/19/90 letter. The asterisks (*) indicate



which conditions TWI has modified based on Trial Burn information. A specific justification for each of these changes is included below.

ITEM NO.

PARAMETERS

3a

Primary Chamber Temperature

JUSTIFICATION

TWI is setting a waste feed cut-off of 1500°F Primary Chamber temperature as prescribed in the RCRA, Post Trial Burn Conditions, as discussed with IEPA. It is our objective to operate the incinerator at 1600°F or above in the primary chamber. The waste feed shutdown during runs 6 - 8, which were designated as meeting the RCRA Incinerations Standards, was 1300°F. The minimum temperature demonstrated during runs 6 - 8 was 1310°F. The minimum by-minute kiln temperature reported is not a rolling average over that minute, rather an arithmetic mean.

ITEM NO.

PARAMETERS

3b

SCC Temperature

JUSTIFICATION

TWI will establish a SCC temperature waste feed shutdown of 1.820°F. This temperature is the minimum temperature demonstrated in runs 6 though 8 (see Attachment No. 1 - Run 6 - 19:43). Although the concept of a rolling average was discussed, rolling averages were not used to calculate the temperature during the trial burn, rather a minute-by-minute arithmetic mean was used. During normal operations the SCC operates within a temperature range. This is also true during trial burn conditions. To establish either a mean or an average operating temperature as a minimum temperature is an improper interpretation of the results. The proposed temperature of 1,950°F is causing slag to melt off the walls and clog the SCC slag conveyor causing the unit to shut down, and greatly limiting our ability to effectively utilize the incinerator by eliminating TW1's ability to burn dirt or dirt-like substances.



Page Three

ITEM NO.

PARAMETERS

3e

Spray dryer adsorber outlet temperature

JUSTIFICATION

TWI assumes the agency concern in limiting the spray dryer outlet temperature is based on the discussion of this topic in USEPA proposed Hazardous Waste Incinerator Regulation 55 Fed. Reg. 17, 862 (April 27, 1990). CWM and others have commented on this issue and TWI has included that comment for your review as Attachment No. 2. In general, TWI and CWM believe that a decision to regulate APCD inlet or outlet temperatures is scientifically unsupportable and premature based on the extremely limited data and evaluation presented to date. TWI will operate at temperatures successfully demonstrated in the Trial Burn, which included a waste feed shutdown limit ≥500°F.

ITEM NO.

PARAMETERS

3i

Combustion Stack Gas Flow

JUSTIFICATION

As previously agreed with IEPA and confirmed in TWI's 10/24/90 letter, this condition should provide for combustion stack gas flow greater than 43,000 acfm.

ITEM NO.

PARAMETERS

3j

0,

JUSTIFICATION

TWI will establish an 0_2 concentration of $\underline{6.4\$}$ as the waste feed shutdown. This is the minimum 0_2 level demonstrated in runs 6 though 8 (see Attachment No. 1A - Run 7 at 13:28) which were designated as meeting the RCRA incineration standards. TWI did not calculate a rolling average for oxygen while running this test, rather a one minute value was obtained and reported. Incinerator #4 is currently operating at 8% 0_2 and is reporting 150-200 low 0_2 waste feed shutdown per a 24 hour period as discussed at our meeting.



Page Four

ITEM NO.

PARAMETERS

4., d., and e

Kiln Feed Rates

JUSTIFICATION

TWI recognizes that the guidance document indicates that there should be feed rate limitations. However, we believe that these feed rates must vary based on the heating value of the waste and

Page Four

the approved Btu/hr condition of the kiln and secondary. interim TWI will establish that the kiln drum solids and the kiln bulk solids be combined for a total bulk feed of 7,000 lbs/hour with a not to exceed 2,500 lbs/hr of drum solids. essentially no difference in these two waste feeds, with high and low BTU material arriving in both forms, as a result the two should not be separated. Additionally, drum solids and bulk solids are fed via a common hydraulic ram system. During the trial burn testing the drum solids and bulk solids were the same material except for the POHC's spiked in each stream. TWI believes it is necessary to combine these two waste streams when burning dirt because limiting the feed rate of dirt to 4500 lbs/hr does not provide a sufficient depth of material in the kiln and increases the potential for slagging in the kiln. TWI believes combining the feed rates for dirt or dirt like feeds was properly demonstrated in the Trial Burn.

ITEM NO.

PARAMETERS

4., a., and c.

Kiln Feed Rates

JUSTIFICATION

TWI will combine Kiln High Btu Liquids and Kiln Sludge feeds not to exceed 1250 lb/hr. Both of these waste streams represent significant heat input to the kiln and are not fed at the same time. The physical characteristics of the two waste streams are basically identical with the exception of viscosity. The sludge handling system has been designed to transfer more viscous liquids to the kiln. Both liquids are atomized into the kiln at the feed end. During the trial burn testing, the Hi-Btu liquids and sludge were basically the same material except for the POHC's spiked in each stream.



Page Five

ITEM NO.

PARAMETERS

4.f.

Kiln Auxiliary Fuel Oil

JUSTIFICATION

As previously agreed and confirmed in our 10/24/90 letter (see Attachment No. 3) this condition applies only to auxiliary fuel oil or waste derived fuels.

ITEM NO.

PARAMETERS

4.g.

SCC Auxiliary Fuel Oil

JUSTIFICATION

As previously agreed and documented in our 10/24/90 letter it was noted that this condition applies only to auxiliary fuel oil or waste derive fuels.

TWI believes that these amended post-trial burn conditions are justified based on data generated during Trial Burn Test Run Nos. 6, 7, and 8 and indicate compliance with applicable IAC and RCRA incinerator regulations.

Please be advised that TWI intends to comply with the post-trial burn conditions in our Part B permit modified to reflect your October 19, 1990 guidance letter and those revisions contained in this letter. We will implement these conditions effective November 14, 1990.

If you have any comments or questions regarding these clarifications please advise us immediately.

Very truly yours,

Johan Bayer

Staff Vice President and

Manager of Incineration Programs

JB/RL:rv Attachments

cc: Rarish Desai Rob Watson

TABLE NO. 1 TWI POST TRIAL BURN CONDITIONS UNIT NO. 4

AUTOMATIC WASTE FEED CUTOFFS SETPOINTS

- *a. Primary chamber below 1500°F
- *b. Secondary combustion chamber below 1820°F
- c. Primary or secondary chamber above atmospheric pressure for 2 seconds
- d. Spray dryer adsorber inlet greater than 1200°F
- *e. Spray dryer adsorber outlet greater than 500°F
- f. Low liquid level in lime slurry head tank
- g. Low makeup water pressure into slurry head tank
- h. Baghouse tube sheet pressure drop greater than 8 inches water column
- *i. Combustion stack gas flow less than 5,000 acfm or greater than 43,000 acfm
- *j. Oxygen concentration less than 6.4 by volume
- k. Carbon monoxide concentration greater than 400 ppm
- 1. Carbon monoxide concentration greater than 50 ppm for 3 minutes
- m. Total hydrocarbon concentration greater than 85 ppm methane corrected to 7% oxygen
- n. HCl concentration greater than 35 ppm for 1 hour
- o. Opacity greater than 10%
- p. Primary fuel pressure below 30 psig
- q. Combustion air pressure below 10 inches W.C.
- r. Primary burner failure
- s. Secondary burner failure
- t. Emergency stack open
- u. Tempering chamber exit temperature greater than 1200°F
- v. Tempering chamber water pressure less than 40 psig

WASTE FEED LIMITATIONS

- *a. Kiln High Btu Liquids and sludges shall not exceed 1250 lbs/hr
- b. Kiln Low Btu Liquids shall not exceed 650 lbs/hr
- *c. (Deleted)
- d. Kiln Drum solids shall not exceed 2,500 lbs/hr
- *e. Kiln Bulk solids shall not exceed 7,000 lbs/hr (when operating with Bulk solids only)
- *f. Kiln Auxiliary Fuel (Waste) fuel oil shall not exceed 100 lbs/hr
- *g. SCC Auxiliary Fuel (Waste) fuel oil shall not exceed 450 lbs/hr
- *h. SCC High Grade Waste Derived Fuel shall not exceed 1,100 lbs/hr
 - i. The feed rate of chlorine shall not exceed 300 lbs/hr
- j. Kiln Auxiliary Fuel (Waste) Fuel oil shall not exceed

ATTACHMENT 1

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feasible. Moreover, if Cl_2 control measures are mandated, compliance will require continuous Cl_2 emissions monitoring of stack gases. At present, WMI is unaware of any commercially available Cl_2 continuous emission monitors. In addition, prior to implementing any Cl_2 standard, the Agency must demonstrate and verify a method for Cl_2 measurement in the stack gas during a trial burn.

G. Limitations on APCD Inlet Temperatures

The Agency cites two studies 26/ to support its conclusion that chlorinated dibenzodioxins ("CDDs") and chlorinated dibenzofurans ("CDFs") can form on fly ash from municipal waste combustors ("MWCs") in the presence of excess oxygen at temperatures in the range of 480 to 750°F. 55 Fed. Reg. 17,889. The only support for this conclusion -- and the Agency's apparent extrapolation that the same is true for hazardous waste incinerators -- found in a review of the two studies is the following:

The final hypothetical mechanism involves catalyzed reactions on fly ash particles at low temperatures. The lab scale evidence indicates that the chlorination of related-structure precursors on fly ash particles to form PCDD/PCDF can occur but that the rates are

^{26/} EPA, Municipal Waste Combustion Study: Combustion Control of Organic Emissions, EPA+ 1530-SW-87-021C, PB87-206090 (June 1987) (hereinafter cited as "Municipal Waste Combustion Study/Organic Emissions"); EPA, Municipal Waste Combustion Study: Flue Gas Cleaning Technology, EPA/530-SW-87-021D, PB87-206108 (June 1987).

relatively slow (Eiceman et al., 1982; Rhgei and Eiceman, 1982). Recent work (Vogg, Metzger and Stieglitz, 1987) has shown the importance of this mechanism as well as quantifying the temperature dependence. . . Vogg et al. (1987) indicate that the optimal temperature for such catalytic reactions is approximately 600°F.

Municipal Waste Combustion Study/Organic Emissions, at p. 4-4.

These reports referenced in the Municipal Waste Combustion Study, which provide the bases for the Agency's conclusions regarding the relationship between APCD inlet temperature and CDD/CDF formation, were not included in the Administrative Record for this proposed rule. Consequently, WMI has been unable to review these critical supporting documents and cannot comment on their relevance or adequacy.

In general, several aspects of hazardous waste incinerator operations minimize the possibility of CDD/CDF formation. They include:

- o DRE requirements for PCBs and other CDD/CDF precursors (e.g., chlorobenzenes and chlorophenols) are established at 99.9999 percent;
- o DRE requirements for other organics are established at 99.99 percent and this proposed rule's regulation of PICs would increase organic compound destruction efficiency further;
- o To the extent that organic particulate precursors (and the chlorine radicals) that

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theoretically are necessary to form the

It should be noted that EPA's proposed rules are designed to control CDDs/CDFs formed through only one of four theoretical pathways. See id. Furthermore, the formation pathway that is being targeted by the Agency proceeds at rates that are described as "relatively slow." Id. Thus, the effectiveness of APCD inlet temperature restrictions on overall CDD/CDF emissions (which presumably will continue to occur through the remaining three pathways) is questionable.

The Agency admits that "available data indicate that CDD/CDF emissions from hazardous waste combustion devices are much lower than can be emitted from MWCs." 55 Fed. Reg. 17,866. This statement is supported by the emissions data presented on Table W in Attachment F to these comments. Furthermore, current understanding of this issue can only be characterized as theoretical. For example, one study states:

^{27/} Municipal Waste Combustion Study/Organic Emissions.

"Currently, there are no definitive data on the mechanism of formation or destruction of PCDD/PCDF in municipal waste combustion facilities." 28/ In light of the current state of knowledge concerning CDD/CDF formation, particularly with respect to the applicability of MWC test results to hazardous waste incinerators, a decision to regulate APCD inlet temperatures is scientifically unsupported and would be premature.

Moreover, restriction of APCD inlet temperature to 450°F would present severe operational difficulties and result in increased air emissions at incinerators that rely on dry scrubbing systems. Three of CWM's incinerators have been designed and constructed such that inlet temperatures to the baghouse filter generally range between 370 and 550°F. The upper temperature has been established to protect the fiberglass baghouse filters, which would start to decompose at the elevated temperatures. The lower limit is maintained to prevent water condensation on the spent lime in the dry scrubber. A "wetter" lime results in the following operational and environmental impacts:

o Valves and lines become clogged, creating operational and maintenance problems;

^{28/} See Municipal Waste Combustor Study/Organic Emissions.

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- O Lime spray patterns are not as effective in contacting combustion gases, resulting in increased HCl emissions; and
- o Excessive particulate coating of the filter bags increases particulate emissions above that normally experienced during periodic pulse cleaning of the bags.

The incinerators presently are interlocked so that waste feed is shut off if the baghouse inlet temperature exceeds a high temperature alarm. These occurrences would be more frequent if the temperature allowance (and interlock setpoint) were reduced. Given that the low end and optimal temperature range for CDD/CDF formation are reported to be 480°F and 570°F, respectively, see 54 Fed. Reg. 52,263 (December 20, 1989), a temperature higher than 450°F (e.g., 550°F) would appear to be equally protective of public health, while not imposing undue operational constraints on existing incinerators.

Finally, WMI offers two other comments related to this issue. First, because combustion gas exit temperatures from wet scrubbers are lower than from dry scrubbers, the unintended effect of the proposed regulations will be to provide a bias in favor of wet scrubbers in the design of future incinerators. At some locations (e.g., arid environments), wet scrubbers are an environmental and economic liability due to their greater

demand for water. Further, incinerators that use wet scrubbers generally have a lower particulate removal efficiency than those employing dry scrubbers.

Second, APCDs typically consist of a wet and/or dry scrubbing system for acid removal followed by a particulate removal system (e. g., baghouse or electrostatic precipitator). Inlet temperatures to the scrubber may range from 800 to 1,800°F. WMI assumes that EPA's proposed temperature standard is meant to apply to the particulate removal device.

IV. Direct Transfer of Hazardous Waste From Transport Vehicles to a Boiler or Industrial Furnace (55 Fed. Reg. 17,865-66).

The practice of introducing hazardous waste-derived fuels directly from transport vehicles into boilers and industrial furnaces ("BIFs") has taken place for a decade without regulatory review and control. The chief cause of this dilemma is the Agency's belief -- first stated in its October 26, 1989 supplemental proposal on BIFs -- that this practice may be exempt under 40 C.F.R. § 261.6(c)(2) from the interim status and final permit storage standards in Parts 264 and 265. See 54 Fed. Reg. at 43,736. In this supplemental proposal, the Agency suggested two alternatives for responding to some permit authorities' concerns with the safety and overall treatment efficacy of direct transfer operations: (1) permit writers could use the omnibus authority under Section

ATTACHMENT 3



Trade Waste Incineration
a Division of
Chemical Waste Management, Inc.

7 Mobile Avenue Sauget, Illinois 62201-1069 (618) 271-2804

OCT 29

October 24, 1990

Mr. Bharat Mathur Acting Manager, Permit Section Division of Air Pollution Control Illinois Environmental Protection Agency 2200 Churchill Road Springfield, IL 62706

Mr. Lawrence Eastep Manager, Permit Section Division of Land Pollution Control Illinois Environmental Protection Agency 2200 Churchill Road Springfield, IL 62706

RE: Unit #4 Trial Burn Report IEPA-DAPC Reference 163121AAP IEPA-DLPC Reference 1631210009 Administrative Clarifications

Dear Sirs:

Regarding your letter dated October 19, 1990 on Unit #4 Trial Burn Report, Trade Waste Incineration has contacted Harish Desai of the IEPA-DAPC, concerning the contents of this letter and the result of this conversation are the following administrative clarifications:

Condition 3.i. - Combustion stack gas flow less than 5,000 acfm or greater than 40,000 acfm.

It was stated that this was in error and should read, "combustion stack gas flow less than 5,000 acfm or greater than 43,000 acfm."

Condition 4.f. - Kiln fuel oil shall not exceed 100 lbs./hr.

It was stated that this means auxiliary fuel and not virgin fuel oil. Condition should read, "Kiln auxiliary fuel oil shall not exceed 100 lbs./hr."

Condition 4.g. - SCC fuel oil shall not exceed 450 lbs./hr.

It was stated that this means auxiliary fuel and not virgin fuel oil. Condition should read, "SCC auxiliary fuel oil shall not exceed 450 lbs/hr."

Bharat Mathur Lawrence Eastep October 24, 1990 Page 2

This letter is a notification that TWI has amended these conditions to include the referenced clarifications.

Please call if you have any questions regarding these clarifications.

Sincerely,

J. L. Gary

General Manager

gjg/34

cc: DAPC, Region III

DLPC, Collinsville Region

DLPC, Doug Clay DLPC, Rob Watson

Legal, Bill Ingersoll

DAPC, Harish Desai DAPC, Jim Cobb

USEPA, Region V, George Hamper